



SUPPLEMENT ANALYSIS

for

Continued Operation of
Lawrence Livermore National Laboratory and
Sandia National Laboratories, Livermore

Volume I: Main Report



March 1999

SUPPLEMENT ANALYSIS

for

Continued Operation of
Lawrence Livermore National Laboratory and
Sandia National Laboratories, Livermore

Volume I: Main Report

March 1999

DOE/EIS-0157-SA-01

CONTENTS

NOTATION.....	vii
SUMMARY	S-1
1 INTRODUCTION.....	1-1
1.1 Background	1-1
1.2 Public Involvement.....	1-2
1.3 Need for and Purpose of the Supplement Analysis.....	1-3
1.4 Proposed Action	1-4
1.5 Elements of LLNL Operations Considered in This Supplement Analysis.....	1-6
1.5.1 New and Modified Projects and Modified Ongoing Actions	1-7
1.5.2 Environmental Considerations	1-8
1.5.3 Administrative Limits.....	1-11
1.5.4 Waste Generation and Management.....	1-12
1.6 General Analysis Approach	1-12
1.7 Determination of Impact Areas for Detailed Analysis.....	1-14
2 IMPACT AREAS NOT REQUIRING FURTHER ANALYSIS	2-1
2.1 Socioeconomics	2-1
2.2 Air Quality	2-2
2.2.1 Criteria Pollutants.....	2-2
2.2.2 Other Releases to the Air.....	2-4
2.3 Noise	2-5
2.4 Water Quality.....	2-6
2.5 Ecology	2-7
2.6 Hazardous Materials	2-8
2.7 Cultural Resources	2-9
2.8 Land Use	2-10
2.9 Transportation	2-11
2.9.1 Employee Vehicles	2-11
2.9.2 Material and Waste Transportation.....	2-12
2.10 Miscellaneous	2-13
2.10.1 Occupational Protection	2-13
2.10.2 Environmental Spills	2-14
2.10.3 Water Consumption.....	2-14
2.10.4 Electrical Energy Consumption.....	2-15

CONTENTS (Cont.)

3 THREATENED, ENDANGERED, AND OTHER SPECIAL STATUS SPECIES	3-1
3.1 The 1992 EIS/EIR Assessment.....	3-1
3.2 Changes from 1992 to 1997	3-3
3.3 Analysis of Projected Changes from 1998 to 2002.....	3-4
3.4 Conclusions	3-5
4 WETLANDS	4-1
4.1 The 1992 EIS/EIR Assessment.....	4-1
4.2 Changes from 1992 to 1997	4-2
4.3 Analysis of Projected Changes from 1998 to 2002.....	4-2
4.4 Conclusions	4-3
5 PALEONTOLOGY	5-1
5.1 The 1992 EIS/EIR Assessment.....	5-1
5.2 Changes from 1992 to 1997	5-1
5.3 Analysis of Projected Changes from 1998 to 2002.....	5-2
5.4 Conclusions	5-2
6 ACCIDENTAL RELEASE OF RADIOLOGICAL MATERIAL	6-1
6.1 The 1992 EIS/EIR Assessment.....	6-2
6.2 Analysis of Projected Changes from 1998 to 2002.....	6-5
6.2.1 Building 332 of the Superblock.....	6-6
6.2.2 Tritium Facility: Building 331	6-8
6.2.3 Nondestructive Test Facility: Building 239.....	6-10
6.3 Conclusions	6-10
7 WASTE MANAGEMENT	7-1
7.1 The 1992 EIS/EIR Assessment.....	7-2
7.2 Changes from 1992 to 1997	7-3
7.2.1 Waste Management	7-3
7.2.2 Waste Generation	7-5
7.3 Analysis of Projected Changes from 1998 to 2002.....	7-7
7.3.1 Waste Management	7-7
7.3.2 Waste Generation	7-8
7.4 Conclusions	7-9

CONTENTS (Cont.)

8 ENVIRONMENTAL JUSTICE.....	8-1
8.1 The 1992 EIS/EIR Assessment.....	8-2
8.2 Changes from 1992 to 1997	8-2
8.3 Analysis of Projected Changes from 1998 to 2002.....	8-2
8.4 Conclusions	8-7
9 CUMULATIVE IMPACTS	9-1
9.1 The 1992 EIS/EIR Assessment.....	9-1
9.2 Changes from 1992 to 1997	9-2
9.3 Analysis of Projected Changes from 1998 to 2002.....	9-3
10 CONCLUSIONS	10-1
11 REFERENCES.....	11-1
APPENDIX A: Sandia National Laboratories, Livermore, Contribution to the Supplement Analysis	A-1

FIGURES

1.1 LLNL's Programmatic Evolution.....	1-5
1.2 General Analysis Approach	1-14
8.1 Distribution of Minority Populations in the Vicinity of the Livermore Site	8-3
8.2 Distribution of Low-Income Populations in the Vicinity of the Livermore Site	8-4
8.3 Distribution of Minority Populations in the Vicinity of Site 300.....	8-5
8.4 Distribution of Low-Income Populations in the Vicinity of Site 300	8-6

TABLES

1.1	New or Modified Key Projects Considered in the Supplement Analysis	1-9
6.1	1992 EIS/EIR Administrative Limits on Radioactive Materials for Buildings 332, 334, 331, and 239 at the Livermore Site	6-2
6.2	Proposed Administrative Limits on Radioactive Materials for Buildings 332, 334, 331, and 239 at the Livermore Site	6-5
6.3	Impacts from Superblock Plutonium and Uranium Criticality Accidents for the Nearest Off-Site Individual and General Population	6-8
7.1	LLNL Main Site and Site 300 Waste Generation Estimates for 1992 and 2002 from the 1992 EIS/EIR.....	7-2
7.2	Actual Waste Generation Quantities by Waste Type at LLNL for 1995 through 1997	7-6
7.3	LLNL Waste Generation Comparison: 1992 Baseline and 1992 EIS/EIR Projections for 1997 and 2002 versus 1997 Actual and Current Projections for 2002.....	7-8
A.1	Comparison of 1992 EIS/EIR Impacts with 1996 Conditions at SNL	A-4

NOTATION

The following is a list of the acronyms, abbreviations, and units of measure used in this document. Some notation used only in tables is defined in the respective tables.

ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
ASCI	Advanced Strategic Computing Initiative
BA	biological assessment
BO	biological opinion
CDOT	California Department of Transportation
CEDE	committed effective dose equivalent
CEQ	(President's) Council on Environmental Quality
CEQA	California Environmental Quality Act of 1970
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFC	chlorofluorocarbon
CFF	Contained Firing Facility
CFR	<i>Code of Federal Regulations</i>
CHARM	Complex Hazardous Air Release Model
D&D	decommissioning and decontamination
DOE	U.S. Department of Energy
DOE/OAK	U.S. Department of Energy, Oakland Operations Office
DOI	U.S. Department of the Interior
DOT	U.S. Department of Transportation
DWTF	Decontamination and Waste Treatment Facility
EA	environmental assessment
EDE	effective dose equivalent
EIR	environmental impact report
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ERPG	Emergency Response Planning Guide
ETDP	Expedited Technology Demonstration Project
EWSF	Explosive Waste Storage Facility
EWTF	Explosive Waste Treatment Facility

FMD	Fissile Materials Disposition
FWS	U.S. Fish and Wildlife Service
FY	fiscal year
HEPA	high-efficiency particulate air (filter)
HVAC	heating, ventilation, and air-conditioning
HW	hazardous waste
LLMW	low-level mixed waste
LLNL	Lawrence Livermore National Laboratory
LLW	low-level radioactive waste
MAR	material at risk
MEI	maximally exposed individual
MOX	mixed oxide
MSO	molten salt oxidation
NEPA	National Environmental Policy Act of 1969
NIF	National Ignition Facility
NTS	Nevada Test Site
PCB	polychlorinated biphenyl
PEIS	programmatic environmental impact statement
PM ₁₀	particulate matter with aerodynamic particle diameter equal to or less than 10 µm
PM _{2.5}	particulate matter with aerodynamic particle diameter equal to or less than 2.5 µm
RCRA	Resource Conservation and Recovery Act
R&D	research and development
RD&D	research, development, and demonstration
RI/FS	remedial investigation/feasibility study
RMP	Risk Management Plan
ROD	record of decision
SA	supplement analysis
SAR	safety analysis report
SCIF	Sensitive Compartmented Information Facility
SEAB	Secretary of Energy Advisory Board
SEIS	supplemental environmental impact statement
SHPO	State Historic Preservation Officer
SNL	Sandia National Laboratories
SNM	special nuclear material
SSM PEIS	Stockpile Stewardship and Management Programmatic Environmental Impact Statement
TEDE	total effective dose equivalent
TRL	Tritium Research Laboratory

TRU	transuranic waste
TSCA	Toxic Substances Control Act
TSR	Technical Safety Requirement
TWMS	Total Waste Management System
UC	University of California
UO ₂	uranium dioxide
USEC	U.S. Enrichment Corporation
VISTA	Verification, Intelligence, and Special Technology Analysis
VOC	volatile organic compound
WIPP	Waste Isolation Pilot Plant
WM PEIS	Waste Management Programmatic Environmental Impact Statement

UNITS OF MEASURE

cm	centimeter(s)
cm ²	square centimeter(s)
d	day(s)
ft	foot (feet)
ft ³	cubic foot (feet)
g	gram(s)
µg	microgram(s)
gal	gallon(s)
gsf	gross square feet
h	hour(s)
kg	kilogram(s)
km	kilometer(s)
kW	kilowatt(s)
lb	pound(s)
µm	micrometer(s)
m	meter(s)
m ³	cubic meter(s)
mi	mile(s)
MW	megawatt(s)
ppm	part(s) per million
yr	year(s)

[This page intentionally left blank]